How to Put an EMWIN Rebroadcast Station on the Air

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✔ **Obtain a rebroadcast frequency and approved transmitter.** This is the most time-consuming and difficult task. Some suggested frequency sources are:

- ✏ National Guard (usually VHF)
- ✏ City/County/Emergency Management
- ✏ FM subcarrier
- ✏ TV subcarrier
- ✏ NWS-Owned (163.325Mhz, 163.300Mhz, 168.8125Mhz, and 168.7125Mhz)

✔ **NWS-Owned Frequencies**

- ✏ It is planned to propagate the 163.325Mhz frequency first. To keep with this planning, this is the frequency the Emergency Manager (EM) should request. It is a good idea to go ahead and check your broadcast area for anyone broadcasting on this frequency . This is not likely but could be possible. If this frequency is already in use by the time EM applies , he should request one of the other frequencies. Check for cell phone activity in your area that may be close to one of these frequencies. If all is clear in the frequency checked, fill out a frequency request ahead of time getting all the information on the request. You can download and print both a frequency request and a cooperators agreement in PDF format for your own head start use. The EM will still need to get an official request form from the Warning Coordination Meteorologist (WCM) to get the process rolling.

✔ **The Application Process**

- ✏ In order for an EM to rebroadcast using one or more of these frequencies, he must **first contact his local WCM** and be identified as valid EM. The WCM will then provide him with an official frequency request form and a cooperators agreement. Once the frequency request is completed, the EM will return it to the WCM. The WCM will then send the request to the regional Dissemination Meteorologist (**Greg Noonan for Central Region**). It will then be forwarded to the regional frequency manager to begin the approval process. This process involves the regional frequency manager (**Jerry Finke for Central Region**), the NWS frequency manager, and the NTIA. After approval, the EM can purchase a transmitter set to the assigned frequency. **(**The main transmitter manufacturer, Zephyrus, has stopped making transmitters for NWS frequencies. At this time, there is officially no new manufacturer making approved transmitters for NWS frequencies. There are some independent people rebuilding old transmitters.**)** Note: The type of emission is F1D and the power into the antenna feed is limited to 100 watts.

After the system is ready to operate, the cooperators agreement (operators license) is signed by both the EM and the responsible NWS official. Once signed, the system can begin transmission.

✔ **Pertinent Information**

- ✏ Only transmitters that pass the NTIA narrowband requirements and has passed all the required tests can be used. Custom built one of a kind transmitters for the purpose of EMWIN retransmission will not be accepted by the NTIA or the NWS of use on these frequencies (This requirement may not still be in effect). Other manufacturers are invited to produce a narrow band transmitter that passes the NTIA requirements for these frequencies. Plan on several months if you apply for a new license, regardless of the source.

✔ **Locate a source for funding the station.** Some suggestions:

- ✏ State/County/Local Emergency Management
- ✏ Local Industry (especially those that are either safety-oriented, community-oriented, or need a good PR boost)
- ✏ Community Colleges
- ✏ Radio/TV stations that DON'T see the NWS as "competition", but as "partners

Depending upon the quality and durability of the equipment you purchase, the total cost for a single rebroadcast system (one rebroadcast station) could range from around $15K to $5K. Prices for equipment are available on the web, via the links on the NWSH-maintained EMWIN page.

✔ **Locate a site for the station.** Will it be at the NWS office?

If ***YES:***

- ✏ You may add local NWS products to the database (such as local 88D imagery, TAFs, etc) via an LDM connection to your AWIPS. Contact Bill Gery in SOD for guidance in how to do this.
- ✏ You'll need a **Memorandum of Agreement** (MOA) with any partners that provide funding, frequencies, etc.
- ✏ Form CD210 must be completed for any equipment *donated to* the NWS.

If ***NO:***

- ✏ You'll need to complete MOAs if the NWS retains ownership in any equipment included in the project or provides an NWS frequency
- ✏ Local radar imagery may be added by use of a Weathernode "plugin" - "NEXRAD Collector" - or by an LDM push to a LINUX computer at the rebroadcast location.

✔ **Purchase Equipment.** You'll need:

- ✏ A downlink system (satellite dish and associated hardware, cables, etc., available from several manufacturers - see vendor list at http://iwin.nws.noaa.gov/emwin/winven.htm ***OR*** a 24/7 Internet connection to pull the EMWIN data in via ByteBlaster.
- ✏ A transmitter, antenna, cable, etc. (relatively "turnkey" systems are available from some vendors...OR you can "build your own" if you have the technical expertise)
  - ✔ **For NWS-owned frequencies, there is currently no manufacturer officially making transmitters that meet NWS Specs. There are, however, some independent people who are rebuilding old transmitters and meeting NWS Specs.**
- ✏ A computer, preferably a Pentium. Note that this is NOT necessary for simple retransmission of the 9600 baud satellite signal. If you plan to insert local data or "slow" down the retransmission to 1200 or 2400 baud, you MUST have a computer running the retransmission software.

✔ **Install the equipment and turn it on!** Hopefully, someone skilled in radio broadcasting will be able to provide you with this service.

Advantages of Rebroadcasts

✔ **It's cheaper!** - final cost for customer is under $300 for radio receiver/demodulator/software, compared to $900-$1500 for GOES satellite system (or $600 for a Telstar 5 satellite system that suffers from rain fade).

✔ **Expanding "coverage area" of EMWIN** - While the GOES signal is available from nearly everywhere in the Western Hemisphere, few people tap into it because of the cost mentioned above. By reducing the equipment costs, you are effectively expanding the coverage area to the "low end" customer.

✔ **Rebroadcasters can insert "local data" that is not on the satellite data stream, including:**

- ✏ local radar data
- ✏ other local NWS products, such as TAFs, TWEBs, etc
- ✏ messages/images crediting organizations supplying the signal (less restrictions on this for non-NWS broadcasters, but NWS-owned broadcast facilities can do something similar to the ID's on NWR that give credit to tower owners)
- ✏ "Feedback" messages that pop up onto the screen of all WeatherNode monitors. While this feature is designed to provide info on the EMWIN broadcast, I know of no restriction from using it to let your rebroadcast "customers" know of upcoming spotter talks, etc. that you feel they might not see if it were "buried" in a PNS.
- ✏ Broadcast school closings, road conditions, local emergency information.

✔ **Rebroadcasters can ensure that ALL local products are disseminated on a more timely basis**

- ✏ by scheduling all local products inserted via LDM connection to AWIPS as higher priority than products from other parts of the country, local products (even relatively low priority "routine" ones) are disseminated on the EMWIN radio broadcast faster than they are on the national satellite EMWIN data stream.